

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (canceled).
2. (canceled).
3. (canceled).
4. (canceled).

5. (currently amended): A method for using the complete resource capacity of a synchronous digital hierarchy network, subject to a protection mechanism, in the presence of a data packet network, said network comprising nodes bidirectionally transmitting time division multiplex (TDM) and data traffic over Working and Protection capacity/channels, wherein in case of a failure at the affected nodes, said method comprising:

cutting the working capacity;

subjecting the TDM traffic to said protection mechanism, and shifting the TDM traffic over the protection capacity;

shifting a part of high priority data traffic over the protection capacity; and

a part of low-priority data traffic, transported over the protection capacity in normal conditions, shares a remaining protection capacity with a low-priority part of the data traffic, transported over the working capacity in normal conditions, wherein the complete protection capacity is used to carry data traffic in both normal and failure conditions~~The method according to claim 1,~~

wherein in said network nodes, an Actuator function is performed on a connection matrix

of a cross-connect, whereby in case of a failure, new matrix connections to the protection capacity are established in order to restore the failed working capacity, said Actuator function causing the performing of the following actions on said protection capacity, in case of a failure:

squelching partially the low priority traffic, present before the failure, and pre-empting only a part of the low priority traffic necessary for carrying said TDM and said high priority data traffic;

Bridge and Switch comprising acting on the cross-connection matrix to restore the TDM and high priority data traffic; and

balancing the access for the low priority data traffic to the remaining spare capacity by said statistical multiplexing.

6. (currently amended): A method for using the complete resource capacity of a synchronous digital hierarchy network, subject to a protection mechanism, in the presence of a data packet network, said network comprising nodes bidirectionally transmitting time division multiplex (TDM) and data traffic over Working and Protection capacity/channels, wherein in case of a failure at the affected nodes, said method comprising:

cutting the working capacity;

subjecting the TDM traffic to said protection mechanism, and shifting the TDM traffic over the protection capacity;

shifting a part of high priority data traffic over the protection capacity; and

a part of low-priority data traffic, transported over the protection capacity in normal conditions, shares a remaining protection capacity with a low-priority part of the data traffic, transported over the working capacity in normal conditions, wherein the complete protection capacity is used to carry data traffic in both normal and failure conditions,

reserving a part of the protection capacity to carry Not pre-emptive Unprotected Traffic (NUT) data traffic during a normal condition and a failure condition

~~The method according to claim 2,~~ wherein in said network nodes, an Actuator function is performed on a connection matrix of a cross-connect, whereby in case of a failure, new matrix connections to the protection capacity are established in order to restore the failed working capacity, said Actuator function causing the performing of the following actions on said protection capacity, in case of failure:

    squenching partially the low priority traffic, present before the failure, and pre-empting only a part of the low priority traffic necessary for carrying said TDM and high priority data traffic;

    Bridge and Switch comprising acting on the cross-connection matrix to restore the TDM and high priority data traffic; and

    balancing the access for the low priority data traffic to the remaining spare capacity by said statistical multiplexing.

7. (canceled).

8. (canceled).

9. (canceled).

10. (currently amended): A method for using the complete resource capacity of a synchronous digital hierarchy network, subject to a protection mechanism, in the presence of a data packet network, said network comprising nodes bidirectionally transmitting time division multiplex (TDM) and data traffic over Working and Protection capacity/channels, wherein in case of a failure at the affected nodes, said method comprising:

cutting the working capacity;

subjecting the TDM traffic to said protection mechanism, and shifting the TDM traffic over the protection capacity;

shifting a part of high priority data traffic over the protection capacity; and  
a part of low-priority data traffic, transported over the protection capacity in normal conditions, shares a remaining protection capacity with a low-priority part of the data traffic, transported over the working capacity in normal conditions, wherein the complete protection capacity is used to carry data traffic in both normal and failure conditions,

wherein said network node comprises:

a first switching element to switch the TDM traffic over the TDM part of the working channels, in the non-failure condition, or over the protection capacity in case of failure;

a second switching element for the data traffic, comprising circuits to perform the following actions:

recognizing the class of service of the input data, wherein said input data comprises said high or low priority data traffic; and

assigning the data traffic to a correct output on said working or protection capacity in both non-failure and failure conditions, so as in failure conditions all the high priority data traffic is switched over the protection capacity, and the low priority data traffic is switched over the protection capacity according to said function of statistical multiplexing~~The network node~~  
~~according to claim 9,~~

wherein said second switching element comprises:

an input mapper module for the said recognizing of the class of service of the input data;

a load balancer module for the said assigning of the data traffic to the correct output in both non-failure and failure conditions, said load balancer comprising circuits for:

dividing the high priority from the low priority data by mapping them in different Virtual Containers (VCs) of the synchronous digital hierarchy frames;

applying the said function of statistical multiplexing for the low priority data traffic to access the dedicated VCs; and

balancing the low priority data traffic in both non-failure and failure conditions, so as in failure conditions said low priority data traffic is switched over the protection capacity according to said function of statistical multiplexing.

11. (canceled).

12. (canceled).

13. (canceled).

14. (canceled).